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(54) IMPLANTABLE SURGICAL PIPELINE

(71) We, SOCIETE DES INDUSTRIES PLASTIQUES - SODIP, a French body corporate of 7, Avenue Lionel Terray, 69330 Meyzieu, France, do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:-

The present invention relates to implantable surgical pipelines. These pipelines can be used, in particular, as a prosthesis for replacing a natural pipeline, as an arterio-venous shunt or as a prosthesis giving access to the vessels.

The replacement of biological pipelines gives rise to numerous problems, in particular if the pressure of the fluid inside the pipeline is insufficient to allow the pipeline to be re-opened after collapse of the wall; in that case it is necessary to produce pipelines, the wall of which possesses means for radial elastic return which are sufficient to allow the pipeline to be re-opened after collapse of the wall without requiring internal pressure to be applied.

An attempt has been made to solve this problem by providing a transverse corrugation in the wall of the pipeline. Pipelines, of which the wall has corrugations in that case have the disadvantage of being difficult to colonise by the living tissues. In fact, internal colonisation is poor since the corrugations can move relative to each other and these movements cause the rupture of the colonising film.

In addition, some causes of failure of the replacement of natural pipelines by non-resorbable prostheses are due to poor tolerance in the long term, that is to say after several months' implantation, shown by the surrounding living tissues towards the materials constituting the prosthesis, and this can give rise either to infections or to intolerance phenomena, such as the formation of

granulomas or to an excessive reaction to a foreign body.

An attempt has therefore been made to solve this problem by producing knitted or woven prostheses which are coated with collagen in order to bring about immediate leak-proofness to the fluid. A disadvantage of these prostheses is that the collagen disappears too rapidly before a pipeline of new tissues is properly formed.

According to the present invention there is provided an implantable surgical pipeline for the flow of fluid, said pipeline comprising a tube having flexible walls and suturable ends, the flexible wall being formed of at least one layer of material which is resorbable material but which is not completely resorbable until after at least six months implantation and reinforcing means extending along the length of the flexible wall for maintaining a radially resilient tube construction, the tube construction being of substantially constant cross section along its length.

Such an implantable biological pipeline offers sufficient resistance to crushing and returns to its initial cross-section after collapse of the wall. There are no sudden changes in the cross-section of the pipeline and the pipeline remains flexible without kinking.

In order that the invention will be better understood the following description is given, merely by way of example, reference being made to the accompanying drawings, in which:-

Figure 1 is a perspective view of a length of one embodiment of pipeline according to the invention;

Figure 2 is a view in section through a plane perpendicular to the axis of the pipeline of Figure 1; and

Figures 3, 4, 5 and 6 are perspective views of four more embodiments of pipeline according to the invention.